NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

LAND RECONSTRUCTION, ABANDONED MINED LAND

(Acre)
CODE 543

DEFINITION

Restoring land and water areas adversely affected by past mining practices and increasing the productivity of the area for a beneficial use.

SCOPE

This practice applies to the reconstruction, grading, and reshaping of land disturbed or adversely affected by past mining of all minerals and commodities.

PURPOSE

To make the land useful, reduce erosion and sediment production, protect water resources, maintain, or improve scenic quality of the landscape and protect public health, safety, and general welfare.

CONDITIONS WHERE PRACTICE APPLIES

On abandoned mined lands with excessive erosion; or sources of toxic materials; or source of water pollution; or where the soil materials are capable of improved economic use.

PLANNING CONSIDERATIONS

Evaluate soil, water, and related resources and their limitations for reconstruction. Plan for land use and treatment alternatives. Consider placement of spoil materials, location of access roads, water disposal and impoundments, erosion and sediment control. See Section III – Resource Management Systems for Abandoned Surface Mine Areas.

NOTE: *Treatment and restoration shall equal or exceed the requirements of applicable federal, state, and local laws.*

DESIGN CRITERIA

General. Reconstruction of all sites is to reduce erosion rates to allowable levels; reduce water pollution from sediment, acid drainage, and other toxic materials to acceptable levels; maintain or improve visual resources; stabilize mined lands and spoil piles; protect water resources; provide conditions suitable for the planned land use; and provide protection from hazards to health and welfare.

Soil Properties. The finished land reconstruction must meet the minimum requirements for the specified land use as shown in Section III – Resource Management Systems for Abandoned Surface Mine Areas, except for the slope limits which must be met on at least 80 percent of the area with the remainder in condition that it may be stabilized. Final grades must permit application of needed conservation practices and management needed to control soil losses to allowable levels. An allowance for anticipated settlement shall be made in the final grade if the settlement may interfere with planned use, surface drainage, and water disposal.

Soil Materials Favorable for Plant Growth. Where feasible, soil materials that will support plant growth shall be salvaged and stockpiled where needed for

final cover material. The salvaged materials and all other materials conducive to plant growth must be protected during earth moving operations and spread over the finished surface to the depth specified. Efforts should be made to rebuild the soil with the materials available on the site.

Borrow Areas. Where covering material is taken from other land, the borrow area shall be graded to drain and be revegetated to control erosion. If covering material is taken from adjacent farmland, the topsoil from the borrow area must be stockpiled separately and returned to the borrow area after covering material is removed and the land restored to its planned land use. On prime farmland both the "A" and "B" horizon will be stockpiled separately and returned to the borrow area in sequence. If the total depth of "A" and "B" horizons exceed 48 inches, not more than 48 inches will be required to be removed, stockpiled, and returned. In no case will any land be destroyed or left unprotected as a result of borrowing soil materials to reclaim mined land.

Highwalls. Highwalls that are not covered shall be treated to reduce potential safety hazard, erosion, and water pollution problems. Land slides and other unstable conditions must be treated to reduce their detrimental effects. Treatment may include fencing.

Visual Resources. Reclamation in areas of public visibility and those associated with recreation shall include visual resource design. Spoil piles and borrow areas should be shaped to blend with the natural topography. Materials should generally be shaped so the form is smooth, flowing, and fitting to the adjacent landscape rather than an angular geometric form. In all cases, the appearance of the reclaimed site must be compatible with the adjacent landscape.

SPECIFICATIONS

The area shall be cleared of trees, logs, brush, rubbish, and other materials. Any topsoil, sod, weathered shale, organic matter, and other material conducive to growing vegetation shall be stockpiled and protected from deterioration until used. Any existing vegetation marked for leaving shall be protected. Temporary seeding, mulching, and other measures are to be used as necessary.

All overhanging rocks and walls shall be sloped to one-half to one slope before earth moving is started unless provisions are made for compaction to ensure a stable backfill. Trees, logs, stumps, rubbish, boulders, acidic, or other toxic materials are to be buried during the earth moving operation as shown on the plans or as described in the specifications.

The area shall be shaped to line and grade as shown on the plans or to slopes and grades as specified. Filling operations shall be carried out in successive layers not more than two feet thick unless otherwise specified. Trees and other deleterious materials are to be kept out of the surface soil materials and buried to a depth of two feet below finished grade so that there is no interference with water disposal practices or the operations required for the planned land use. Boulders and rocks shall be covered to a depth established for the planned land use.

After major earth moving is completed, any covering materials are to be spread over the graded areas to the depth specified in the reclamation plan.

If borrow is used from areas outside the reclamation site, the borrow area is to be graded, shaped, and left as specified or shown on the plans.

Planned Land Use

Soil Properties	Cropland	Hayland	Pasture land	Woodland	Commercial Recreation Land	Non-Commercial Recreation Land	Wildlife land
Slope (percent) maximum	15	20	30	40	15	50	50[1]
Depth of root zone [2] (inches) minimum	48	48	24	18	24	12	12
Available water capacity or root zone (inches) minimum	4.0	4.0	2.5	2.0	2.5	2.0	1.0
Depth to high water table (inches) minimum	30	30	18	18	24	12	NA
Reaction (pH of root zone) [3]	4.5-8.4	4.5-8.4	4.0-9.0	3.6-8.4	4.0-9.0	3.6-9.0	3.6-9.0
Rock fragments 73" in [4] Surface layer (wt. pct.) Maximum	10	10	10	50	15	75	74
Depth to toxic [5] material (inches) minimum	48	48	24	18	24	12	12

[1] Must achieve slope stability.

[2] Depths shown may or may not provide sufficient available water capacity in the wet zone for plant growth depending on the texture of the soil materials.

[3] pH of acid surface layers is to be adjusted by incorporation of lime to levels required for satisfactory growth of vegetation required for the land use. Soils with sodium absorption ration (SAR) above 12 may need treatment. The amount in either case is determined by soil tests. pH of the surface will be adjusted to the growing requirements for planned species according to NRCS Standards and Specifications or Technical Notes for the appropriate land use or practice.

[4] Shale material and other coarse fragments that weather rapidly may be higher percentage by weight.

[5] Heavy metals must be buried to depths below the root zone for cropland, hayland, pasture land, range land, and wildlife land to avoid incorporation in food chain. Depths are for root formation and may not be adequate for water quality needs.

Planning considerations for water quantity and quality.

This practice is a management system that may combine practices to most conservation goals. Consult the planning considerations for water quantity and quality for the practices used in this system.

A special concern is the potential for uncovering or redistributing toxic materials from earth moving activities.